

WHAT IS CLAIMED IS:

1. A printing apparatus having printing means that executes printing on a print medium transported along a transportation path, the apparatus comprising:

upstream transporting means including a pair of opposite rollers arranged upstream of said printing means in said transportation path for transporting the print medium by rotating while sandwiching the print medium;

downstream transporting means arranged downstream of said printing means in said transportation path for transporting the print medium; and

storage means for storing nip position information representative of a position of a nip portion between said pair of rollers within said transportation path, the nip portion sandwiching an end of the print medium between said rollers.

2. A printing apparatus as claimed in claim 1, wherein said upstream transporting means comprising a transportation roller located upstream of said printing means in said transportation path and driven by predetermined driving means and a pinch roller that rotates so as to follow rotation of the transportation roller.

3. A printing apparatus as claimed in claim 1, wherein said downstream transporting means comprising a

sheet discharging roller located downstream of said printing means in said transportation path and driven by predetermined driving means and a spur that is urged toward the sheet discharging roller.

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4. A printing apparatus as claimed in claim 1, wherein said nip position information is set on the basis of a test pattern formed on the print medium by said printing means and said transportation means using
10 printing data for forming an image that extends continuously in a transportation direction of said print medium.

5. A printing apparatus as claimed in claim 4,
15 wherein said nip position information is set on the basis of an interval between a predetermined reference position in said test pattern and a leading end of a discontinuous portion.

6. A printing apparatus as claimed in claim 4,
20 wherein when said test pattern is printed, said transporting means transports said print medium 1 mm or less during a single operation when a back end of said print medium is near said nip portion.

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7. A printing apparatus as claimed in claim 4, further comprising information obtaining means for

automatically obtaining said nip position information,
the information obtaining means comprising a photosensor
that reads a printed part and a non-printed part both formed
in the test pattern and means for measuring the interval
5 between the predetermined reference position in the
printed part of the test pattern and the leading end of
the non-printed part, on the basis of an output signal from
a photosensor.

10 8. A printing apparatus as claimed in claim 2,
further comprising information obtaining means for
automatically obtaining said nip position information,
the information obtaining means comprising roller
displacement detecting means for detecting displacement
15 of the pinch roller between a state in which the print
medium is sandwiched between the transportation roller and
the pinch roller at the nip portion thereof and a state
in which the print medium has slipped out from said nip
portion, and means for measuring the interval between a
20 predetermined reference position located upstream of said
nip portion in the transportation path and said nip portion,
on the basis of a result of detection by the roller
displacement detecting means.

25 9. A printing apparatus as claimed in claim 2,
further comprising information obtaining means for
automatically obtaining said nip position information,

the information obtaining means comprising rotation state detecting means for detecting a state of rotation of the transportation roller in a state in which the print medium is sandwiched between the transportation roller and the pinch roller at the nip portion thereof and in a state in which the print medium has slipped out from said nip portion, and means for measuring the interval between a predetermined reference position located upstream of said nip portion in the transportation path and said nip portion, on the basis of a result of detection by the rotation state detecting means.

10. A printing apparatus as claimed in claim 9, wherein said rotation state detecting means detect a change in the speed of rotation of the transportation roller.

11. A printing apparatus as claimed in claim 9, wherein said rotation state detecting means detect a change in the quantity of rotations during each intermittent rotating operation of the transportation roller.

12. A printing apparatus as claimed in claim 4, wherein during an image forming operation performed immediately after the back end of said print medium has slipped out from said nip position, a correcting operation is performed which shifts an operative part of said printing means in the transportation direction compared

to an image forming operation performed immediately before the back end slips out from the nip portion, while increasing the quantity of transportation by the transporting means.

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13. A printing apparatus as claimed in claim 9, wherein said rotation state detecting means comprises an optical code wheel that rotates around the same center of rotation as that of said transportation roller, and a
10 sensor that reads a signal from the optical code wheel.

14. A printing apparatus as claimed in claim 1, wherein said printing means uses thermal energy to generate bubbles in ink so that energy generated by the bubbles can
15 cause the ink to be ejected.

15. A printing method for executing printing on a print medium transported along a transportation path by using printing means, said printing method comprising the
20 steps of:

transporting the print medium by upstream transporting means including a pair of opposite rollers arranged upstream of said printing means in said transportation path while sandwiching the print medium;

25 transporting the print medium by downstream transporting means arranged downstream of said printing means in said transportation path; and

storing nip position information representative of the position of a nip portion between said pair of rollers within said transportation path, the nip portion sandwiching an end of the print medium between said
5 rollers.

16. A printing method as claimed in claim 15, wherein said upstream transporting means comprising a transportation roller located upstream of said printing
10 means in said transportation path and driven by predetermined driving means and a pinch roller that rotates so as to follow rotation of the transportation roller.

17. A printing method as claimed in claim 15, wherein
15 said nip position information is set on the basis of a test pattern formed on the print medium by said printing means and said transportation means using printing data for forming an image that extends continuously in a transportation direction of said print medium.
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18. A printing method as claimed in claim 16, wherein said nip position information is set on the basis of an interval between a predetermined reference position in said test pattern and a leading end of a discontinuous
25 portion.

19. A printing method as claimed in claim 17, wherein

when said test pattern is printed, said transporting means transports said print medium 1 mm or less during a single operation when a back end of said print medium is near said nip portion.

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20. A printing method as claimed in claim 17, comprising an information obtaining step of automatically obtaining said nip position information, the information obtaining step comprising the steps of reading a printed part and a non-printed part both formed in the test pattern and measuring the interval between the predetermined reference position in the printed part of the test pattern and the leading end of the non-printed part, on the basis of an output signal from a photosensor.

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21. A printing method as claimed in claim 15, comprising an information obtaining step of automatically obtaining said nip position information, the information obtaining step comprising a roller displacement detecting step of detecting displacement of the pinch roller between a state in which the print medium is sandwiched between the transportation roller and the pinch roller at the nip portion thereof and a state in which the print medium has slipped out from said nip portion, and a step of measuring the interval between a predetermined reference position located upstream of said nip portion in the transportation path and said nip portion, on the basis of a result of

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detection by the roller displacement detecting step.

22. A printing method as claimed in claim 15,
comprising an information obtaining step of automatically
5 obtaining said nip position information, the information
obtaining step comprising a rotation state detecting step
of detecting a state of rotation of the transportation
roller between a state in which the print medium is
sandwiched between the transportation roller and the pinch
10 roller at the nip portion thereof and a state in which the
print medium has slipped out from said nip portion, and
a step of measuring the interval between a predetermined
reference position located upstream of said nip portion
in the transportation path and said nip portion, on the
15 basis of a result of detection by the rotation state
detecting step.

23. A printing method according to claim 22, wherein
said rotation state detecting step detect a change in the
20 speed of rotation of the transportation roller.

24. A printing method according to claim 22, wherein
said rotation state detecting step detect a change in the
quantity of rotations during each intermittent rotating
25 operation of the transportation roller.

25. A printing method according to claim 17, wherein

during an image forming operation performed immediately after the back end of said print medium has slipped out from said nip position, a correcting operation is performed which shifts an operative part of said printing means in the transportation direction compared to an image forming operation performed immediately before the back end slips out from the nip portion, while increasing the quantity of transportation by the transporting means.